Yan'an Mobile Game Player's Consumption Concept of Donghua University Campus

Boubacar Gamatche Abdoul Aziz, Shen Lei

Glorious Sun School of Business & Management, Donghua University, Shanghai, China
Email: azzgam@hotmail.com

Abstract

This article proposes the design and the results of a project studying the adoption of mobile gaming (playing mobile games) in the Chinese youth market. An adoption model extending TAM (Technology Adoption Model) was used, with intention to use as the dependent variable. Data were gathered from a sample group consisting of university students both Chinese and Foreigners. It was found that adopters of mobile gaming were likely to be male as well as female, and also that the group surveyed exhibited a behavior towards relatively high spending on mobile entertainment (in proportion to income). The key factors affecting mobile gaming adoption in portion China were Perceived Ease of Use, Perceived Enjoyment, Social Influence and Flow. Perceived expressiveness, economic cost was found to be the most significant influential factor affecting intention to use, while perceived enjoyment was found to be motivated by perceived ease of use. Recommendations regarding developing and offering mobile games are also included.

Keywords

1. Introduction

Five years ago, you could find crazed gamer communities in internet cafes on the corner of Chinese street. Anno 2014, games have already largely moved to players' personal devices, especially in the more developed parts of the country. Hardcore gaming is still present in the games market and making the market more diversified. One characteristic has not changed: Chinese gamers categorically demand free-to-play, and only make limited in-app purchases. In that respect, they are overall even "worse" than Dutch gamers, of which 55% do not spend money on games at all which is the highest percentage of free riders of any country in the world.

The gaming market in China is growing fast, even relative to the growing global market, and it grows in practically every submarket. In 2013, the number of gamers in China reached 490 million, a 20.7% increase year on

year, according to GPC (China Game Publishers Association Publications Committee). This represents one third of the total population and three quarters of the online population.

Mobile games are the future. The revenue of China's mobile game market is expected to grow 93% to USD 2.9 billion in 2014, up almost 300% from 2012. In Q1 2014, there are approximately 302.5 million mobile gamers in China, growing by 15.3% quarter-on-quarter. Practically, all big gaming companies have taken part in mobile gaming, including Tencent, Netdragon, Kongzhong, Giant, and Perfect World. Even a publisher like Netease, who has traditionally been strong in MMORPGs, is now quickly developing and licensing mobile content in medium to hardcore segments.

The purpose of the research is to find the adoption behavior of mobile games based on technology acceptance model combined with multiple factors and the keys affect the attitude of mobile gaming users.

The study presented here aims to contribute to the understanding the preferences and perceptions of the young people in China about mobile gaming, and whether there are any specific factors or motivators related to the adoption.

The study is organized as follows: The next section reviews literature of Chinese mobile gaming players. The third section introduces the initial research model. Section 4 presents a summary of the survey results and discusses some of the most important findings and the last section the paper provides a discussion and concluding remarks. Finally, the paper provides concluding remarks and directions for future research.

2. Literature Review

It has been suggested in the literature that mobile gaming is a mobile service which will become a significant revenues stream builder for mobile business (Anckar & D'Incau 2002) [1]. Supporting this market research forecasts predict that worldwide mobile gaming revenues will "increase six-fold within the next four to five years (Armitt 2005) [2]. According to Paavilainen (2003, p. 94) [3] the expected adopters of mobile gaming are young people who already use regularly mobile devices. Based on the potential of this market segment, the compound annual growth rate of mobile gaming revenue worldwide is predicted to fall anywhere between 31% and 50% in 2008 (Wisniewski & Morton 2005) [4].

2.1. Mobile Gaming Player's

From different place game research institution has different definitions and terminologies. The definition of mobile games is important because the functions of mobile devices are being converged with those of other devices. Mobile games more precisely, mobile network games are narrowly defined as games conducted in handheld devices with network functionality. Mobile gaming is an example of a mobile commerce (mCommerce) application which is provided through a paid for service. Typically, the mobile network operator to whose network the player subscribes collects the revenue; the revenue stream may be also shared with other business entities involved such as mobile network infrastructure providers, mobile content developers and publishers, portal aggregators, and retailers (Petrova & Qu 2006) [5].

Mobile games can be broadly defined as embedded, downloaded, or networked games conducted in handheld devices such as mobile phones, portable consoles, and PDAs. The key element of this concept is portability: all games in portable devices can be thought of as mobile games without regard to wireless functions. Therefore, this concept expands mobile games by including video games in portable consoles and embedded games in general portable devices such as PDAs, calculators, and dictionaries. As most game devices have been adopted with wireless networking functions, this definition becomes more powerful in game markets.

In terms of portability and networkability, the characteristics of mobile games are different from other device platforms such as PC and console games, which do not have both portability and wireless capability. For example, Game Boy (GB) with no communication functionality was only regarded as a portable console device. However, this concept has lost some of its ground in the market since the advent of new mobile game devices from portable consoles such as Play Station Portable (PSP) and Nintendo Dual Screens (NDS), as wireless networked games began to be serviced through the new mobile game devices.

Recently, the narrow definition of mobile games has been generally used. However, since the meaning of mobile includes that of portable and network (either wired or wireless function is embedded), the broad definition of mobile games including portable game dedicated devices such as GBs and PSPs should be used. This definition is more persuasive in the present and future game market.

2.2. Characteristics of Mobile Games Player's

Mobile Commerce applications show distinctive characteristics, which represent a qualitative differentiation from fixed-line applications. As Mobile Gaming in general and MJG in specific can be seen as a sub-group of Mobile Commerce Applications it is likely that these characteristics can be applied to MJG as well. These characteristics can be summarized as follows:

Ubiquity: The ubiquity of the services permits the enjoyment of them wherever the user feels the need, for example, while waiting in the train-station.

Accessibility: The services are available at any time and immediately. It has been observed that many users access wireless services in niche time and have different usage patterns than people who go online through PCs.

Reachability: From a push-perspective, mobile services allow connection with a user, with his permission, anywhere and anytime. This allows immediate interaction in communication applications and enhances the possibilities to contact possible partners for multiplayer games. The entertainment services can be customized to the user's location. This allows better-targeted entertaining services.

In each period, each inhabitant of a location is pairwise matched with all his neighbors, *i.e.* all other inhabitants of that location, and (in the case of overlapping neighborhoods) also with inhabitants of neighboring locations, to play a coordination game. Ely (1995) and Oechssler (1997) [6] presume the ability of each player to observe the individual strategies and payoffs of all other players in the entire population and, what is more, to take all this information into account when choosing his strategy. Familiar examples which fit to this setting include the circular interaction structure (e.g. Ellison, 1993) [7], where interaction takes place between neighboring locations on a circular line; or the grid structure (e.g. Berninghaus and Schwalbe, 1996b) [8], where each location is represented by a node of a lattice, or in fact any allocation of locations in Euclidean space. On the other way, recent work by Bhaskar and Vega-Redondo (1996) [9] has shown that the selection of the risk dominant equilibrium is due to the presumption of an exogenously fixed interaction structure. In their models, the players can choose their neighborhoods by moving between locations.

In addition, due to technological restrictions, MJG currently are limited to off-line and single user-gaming according to the literature review.

2.3. Characteristics of Mobile Games Player's

Mobile platforms function as game engines by running applications: a game engine is the core code handling the basic functionality of a game. Each mobile device has its own platform, so developers make games based on the formats of those platforms. With the development of platforms, downloaded, 3D games, and more advanced games are now serviced. These platforms are either freely opened or purchased with license fees. Platform holders have tried to expand their platforms, because the prevalence of their platforms implies a strong influence in mobile markets. These days, Java is the most influential platform both in mobile phone games and in handset manufacture. The Java 2 Micro Edition (J2ME) is a freeware version of Java; Execution Engine (ExEn) and Mophun are also freeware platforms distributed mainly in Europe. Brew is the licensed platform mainly used in the United States, Japan, and Korea. Different from mobile phone games, portable console games such as GB, N-Gage, PSP, and NDS have their own development tools for the platforms. Developers who want to make mobile games in portable consoles should use such development kits with the charge of license fees. Since developers adopt more prevailing game kits for the better benefit of their games, the market prevalence of console platforms is parallel with the amount of license fees for portable console manufacturers.

Mobile gaming falls into the broader category of interactive mobile entertainment (Moore & Rutter 2004) [10]. A number of potential drivers of the adoption process of mobile entertainment services have been identified in prior research (Baldi & Thaung 2002; Pedersen, Methlie & Thorbljornsen 2002; Barnes &Huff 2003; Pagani & Schipani 2003; Moore & Rutter 2004; Carlsson *et al.* 2005; Pedersen 2005) [11]. In some countries such of Japan and Korea a point had been made in several studies in the sociocultural and economic contexts have been a significant factor in the development of mobile gaming markets where customers had been predisposed to adopt and use both small and mobile electronic accessories as a result of the leading edge electronic industry cultures (Barnes & Huff 2003) [12].

3. Research Model

To study the adoption of mobile game, we suggest a model integrating many of the most important findings of

uses and gratification studies and adoption behavior of domestication research into a modified version of the theory of planned behavior of Ajzen (1985; 1991) [13]. As discussed, research model presented in this paper is extended based on the TAM model, which retains the essential structure, referenced to many literatures on mobile commerce user adoption behavior. Combined with the characteristics of mobile game, the research model in this paper is extended considering five external factors:

- Perceived Expressiveness.
- Perceived Usefulness and Perceived.
- Perceived Enjoyment.
- Attitude.
- Perceived Critical Mass.
- Subjective Norm.
- Behavioral Control.

As determinants of both attitudes and intention to use (see e.g. Ling, 2001; Höflich and Rössler, 2001) [14], the concept of perceived enjoyment (fun) has previously also successfully been applied in attitudinal models in marketing explaining technology adoption (see e.g. Dabholkar and Bagozzi, 2002) [15]. In **Figure 1**, the modified TPB-model is illustrated. I use this illustration as a basis for the discussion of how the general TPB-model is extended and modified.

User behavior intention, as the main index, predicts and explains the user adoption behavior. The mobile game user adoption model is as shown in **Figure 1**.

The model includes four primary influences of adopters' intention to play mobile games. First, motivational influences include traditional intrinsic (*i.e.* enjoyment), extrinsic (*i.e.* usefulness) and derived (*i.e.* expressiveness) motivations of adoption. These motivational influences are strongly intertwined and reflect the direct instrumentality of playing mobile games. Such motivational influences on intention may or may not be mediated by attitudes. Concurrently, the second source of influence is attitudinal influences, stemming from the motivational determinants and social norm. Third, social influences or subjective norms are postulated to have a direct effect on intention in addition to the indirect effect through attitude. The fourth and last source of influence is resource-related, pertaining to the user's perceived behavioral control of the gaming. Thus, based on the argumentation so far, our main proposition is as follows:

3.1. Perceived Expressiveness

Define abbreviations and acronyms the first time they are used in the text, even after they have been defined in
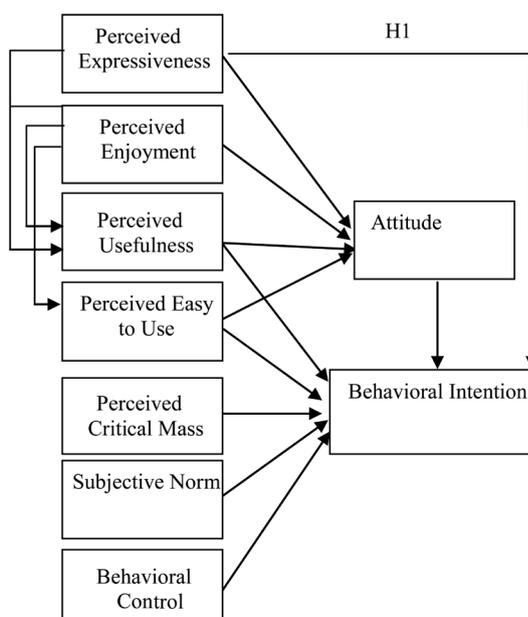

Figure 1. Mobile game user adoption modified model.

the abstract. Abbreviations such as IEEE, SI, MKS, CGS, sc, dc, and rms do not have to be defined. Do not use abbreviations in the title or heads unless they are unavoidable.

Figure 2 shows the proposed research model for Perceived Enjoyment; perceived expressiveness is a stronger motivation for intention to choice communication services (contact and text messaging) than transaction services (gaming and payment). A mobile phone and the related services contribute to the owner's identity, status and public image (Baldi & Thaung 2003, p.27) [16]. The effect of "perceived expressiveness" is stronger in the mobile gaming context compared to other mobile services (Nysveen, Pedersen & Thornbjornsen 2005) [17].

H1: Perceived expressiveness (EX) has a positive effect on BI.

H2: Perceived expressiveness (EX) has a positive effect on PE and PU.

3.2. Perceived Enjoyment

Figure 3 shows the proposed research model for Perceived Enjoyment, stronger motivation for intention to use entertainment services (contact and gaming). As mobile gaming is a leisure-oriented service it may be expected that the enjoyment and fun-seeking aspects will be important. A positive relationship between "computer playfulness" and "perceived ease of use" was found in Venkatesh (2000) [18]. While a challenging game evoke positive feelings, a game which is technically difficult to play may be perceived as not enjoyable (Moore & Rutter 2004) [19].

H2: Perceived enjoyment (PE) has a positive effect on AT.

H2a: PE has a positive effect on PU.

H2b: PE has a positive effect on PEOU.

3.3. Perceived Usefulness and Perceived Ease of Use

Figure 4 shows the proposed research model for Perceived Usefulness was originally seen as a fairly simple concept including components such as effectiveness and efficiency that are mainly related to extrinsic motivation in work contexts. As seen from uses and gratifications studies, the extrinsic motivations of mobile services are not limited to effectiveness and efficiency. My researchers have included elements of intrinsic motivation in the definition of both ease of use and usefulness (e.g. Thompson, Lim and Lai, 19999) [20]. Motivations of accessibility, flexibility, sociability and security have all been mentioned in these studies. Mobile gaming is an ac-
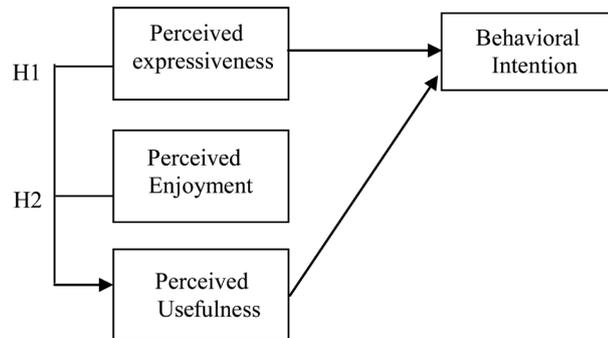

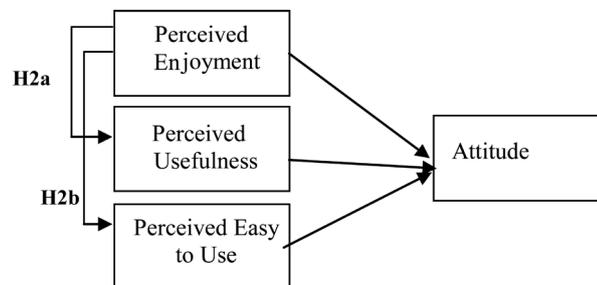**Figure 2.** Proposed research model for perceived enjoyment.

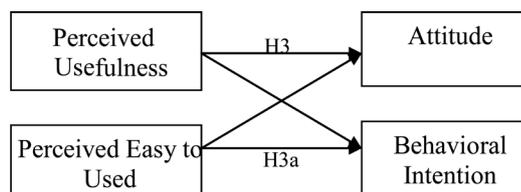**Figure 3.** Proposed research model for perceived enjoyment.

Figure 4. Proposed research model for perceived usefulness and perceived ease of use.
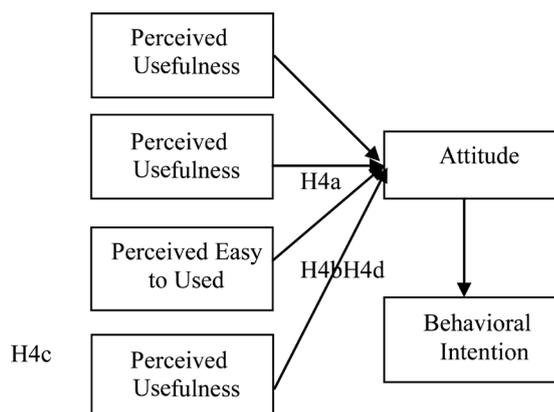

Figure 5. Proposed research model for attitude.

tivity well suited to "filling gaps" in time when travelling or waiting (Anchar & D'Incau 2002) [21]; therefore, it may be perceived as a useful value added service. Mobile device or context limitations (small screen, playing a game in a public place) may also be of significance. However, this antecedent seems to be more important for predicting intention to use utilitarian services:

- Efficiency and direct instrumentality are important as opposed to entertainment services.
- Sociability and fun will be more important motivations.

I also propose that perceived usefulness is a stronger motivation for intention to use utilitarian services than for entertainment services.

H3: Perceived usefulness (PU) has a positive effect on AT and BI.

H3a: Perceived ease of use (PEOU) has a positive effect on AT and BI.

3.4. Attitude

Figure 5 shows the proposed research model for Attitude towards use is a stronger motivation for intention to use new mobile services (transaction services—gaming, payment) than established services (communication services text messaging and contact). Attitude was dropped in the extended TAM proposed by Venkatesh and Davies (2000) [18]. As prior research of mobile services adoption indicates that consumers' attitude may influence behavioral intention (Hung, Ku & Chang 2003) [22], the construct was included.

H4: Attitude (AT) has a positive effect on IU.

H4a: AT has a positive mediating effect between PU and BI.

H4b: AT has a positive mediating effect between PEOU and BI.

H4c: AT has a positive mediating effect between PU and BI.

H4d: AT has a positive mediating effect between BI.

3.5. Perceived Critical Mass

Figure 6 shows the proposed research model for Perceived Critical Mass. This construct refers to the notion that consumers may use a service because other people around them are using it (*i.e.* people would follow others' behavior). A positive relationship between critical mass and behavioral intention to use was reported in a wireless services context (Kleijnen, de Ruyter & Wetzels 2003) [23] and in online gaming (Hsu & Lu 2004) [24].

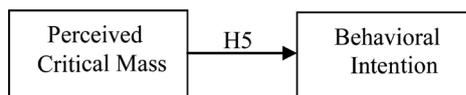H5: Perceived critical mass (PCM) has a positive effect on BI.

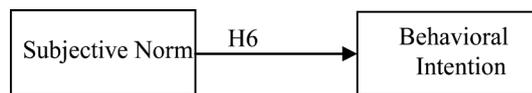**Figure 6.** Proposed research model for perceived critical mass.

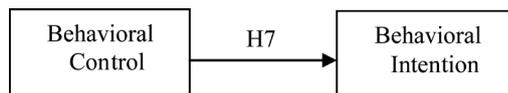**Figure 7.** Proposed research model for subjective norm.

Figure 8. Proposed research model for behavioral control.

3.6. Subjective Norm

Figure 7 shows the proposed research model for Subjective norm, stronger motivation for intention to use communication services (text messaging and contact) than transaction services (gaming and payment). Webster and Trevino (1995) [25] suggest social influences, and thus, subjective norms to be more influential in explaining the adoption and use of new media. Consequently, even though social motivations for adoption may be important, these motivations may by now be more instrumental than norm based, and should be identified through instrumental determinants of attitude toward use rather than through subjective norm. This construct refers to the notion that an individual's perceptions depend on a reference group's opinion as playing a mobile game may give a sense of commonness, leading to being "approved" by the members of the reference group (Kleijnen, de Ruyter & Wetzels 2003) [26]. Similar constructs have been used in (Hsu & Lu 2003; Nysveen, Pedersen & Thornbjornsen 2005) [27].

H6: Subjective norm (SN) has a positive effect on BI.

3.7. Behavioral Control

Figure 8 shows the proposed research model for Behavioral control, stronger motivation for intention to use new and complex services (transaction services—gaming and payment) than for services that are old and simple (communication services—text messaging and contact). Behavioral control includes external factors related to the quality of the service and the revenue model of the supplier. Adoption of mCommerce may be constrained by perceived security and privacy risks, and by service cost (Kleijnen, de Ruyter & Wetzels 2004; Wu & Wang 2005) [28].

H7: Behavioral control (BC) factors (security and cost) have a negative effect on BI.

4. Survey and Results

Data collection was carried out between July 2015 and August 2015 used a sample of university students was selected. It included both Chinese and international students on the Donghua University Campus of Yan'an. Total sample size was 136 respondents. The research was conducted with face-to-face interviews, and the questionnaire was in English language. Data was analyzed using the SPSS software suite.

The questionnaire contained 13 questions, with 5 questions concern demographics with answers to be provided on a Likert scale, all items used a 5 (Five) points Likert scale as (1 = Fully Disagree, 2 = Disagree, 3 = Undecided, 4 = Agree, 5 = Fully Agree. Questions were focused on values, environmental attitudes, level of information about the environment, the pro-environmental behaviors of the respondents and their attitudes towards the mobile application usage fostering environmental conscious behavior.

In this paper, **Table 1** shows the variable characteristics for the data collection carried for this study, the results of the questions about the information gathering habits, and the intention to use mobile phones and mobile applications to get information about environmentally friendly consumption.

The analyses show that out of total samples about 71.3% are male and 28.7% are female. 16.9% are below 20

Table 1. Variable characteristics for the data collection carried for this study.

Variable	Frequency	%
Age(Years)		
10 - 20	23	16.9
20 - 30	91	66.9
30 - 40	16	11.8
40-above	6	4.4
Total	136	100.0
Gender		
Male	97	71.3
Female	39	28.7
Total	136	100.0
Profession		
Student	104	76.5
Teacher	2	1.5
Employee	19	14
Other	11	8.1
Total	136	100.0
User Category		
Expert	93	68.4
Novice	43	31.6
Total	136	100.0
Education		
Below Bachelor	13	9.6
Bachelor	85	62.5
Master	26	19.1
PhD	12	8.8
Total	136	100.0

years, 66.9% are 20 to 30 years 11.8% are 30 - 40 years and only 4.4% are more than 40 years old. Most of mobile phone games users are students (76.5%), either employees or businessmen (14%), 1.5% are engaged in teaching. Educational status of the respondents shows that most of Bachelor and Master Person play mobile phone gaming (62.5% and 19.1% respectively). This data indicates that higher educated people who have completed or about to be completed play mobile phone game. Data also shows that (68.4%) users are expert and 31.6% are new users in playing mobile phone game.

The majority (66.9%) were young adults between 20 and 30 years of age. They fitted well with the mobile generation group (Aarnio *et al*. 2002; Paavilainen, 2003, p. 93; Shchiglik *et al*. 2004; Pedersen 2005; Wong & Hiew 2005) [29]. The sample data showed that mobile phone penetration had reached a saturation point: the entire respondent have a mobile phone. Most respondents (97.8%) owned a less than two years old device. A significant number of respondents (45.6%) had a 3G cell phone and (39.7%) had a 4 G. A significant number of the respondents (75%) are using mobile internet but only 69.9% of them were downloaded mobile gamers.

A relatively low mobile phone expenditure group dominates the sample (with average monthly expenditure less than 30 RMB). This is consistent with the high proportion of prepaid customers in China and those who spend more are likely to be using the technology for business rather than for personal use. In-phone games dominated the actual users segment (47.7%), followed by downloadable games (40.4%). This result aligns with reported results (Schiglick *et al*. 2004; Wisniewski & Morton 2005) [30]. The mobile gamer sub-sample consisted of both female and male consumers (65.5% and 34.5% respectively). The possibility of an association between "gender" and "playing" in the sample was tested and rejected (Pearson's Chi-Square 0.103 with a signi-

Table 2. Pearson's correlation result and can show the correlation is significative at 0.05.

		SN	PEOU	PE	PU	EX
		Correlations				
SN	Pearson Correlation	1	−0.016	0.032	−0.171[*]	0.010
	Sig. (2-tailed)		0.853	0.709	0.046	0.906
	N	136	136	136	136	134
PEOU	Pearson Correlation	−0.016	1	−0.076	−0.083	−0.016
	Sig. (2-tailed)	0.853		0.380	0.336	0.853
	N	136	136	136	136	134
PE	Pearson Correlation	0.032	−0.076	1	0.019	0.066
	Sig. (2-tailed)	0.709	0.380		0.827	0.449
	N	136	136	136	136	134
PU	Pearson Correlation	−0.171[*]	−0.083	0.019	1	0.051
	Sig. (2-tailed)	0.046	0.336	0.827		0.560
	N	136	136	136	136	134
EX	Pearson Correlation	0.010	−0.016	0.066	0.051	1
	Sig. (2-tailed)	0.906	0.853	0.449	0.560	
	N	134	134	134	134	134

[*]Correlation is significant at the 0.05 level (2-tailed).

ficance level of 0.749), meaning that both males and females were likely to be mobile gaming adopters.

A small number of respondents (5.7%, males only) preferred strategy games and the same number (females only) preferred card games. Action and sports games were preferred by females and males (12.9% and 21.4%) with more females than males expressing the preference (the respective ratios were 2:1 and 3:2).

Consistent with the proposed research model further analysis was performed on the mobile game sub-sample only (136 respondents). The construct validity of the instrument was evaluated by computing convergent and discriminate validity performing a principal component analysis with a Varimax rotation. Seven factors (PE, PU, PEOU, SN, BC, EX, IU) met the criteria used in the study (Hair *et al.*, 1998, p. 90, p.111) [31]. **Table 2** shows the Pearson's correlation result and can show the correlation is significative at 0.05 As a result, in the revised model two constructs (PCM and AT) were dropped. Using SPSS, a correlation bivariate procedure was run including the factors retained in the revised model. Using Pearson's correlation ("r") as a measure of strength it was found that IU had a significantly strong relationship with SN (r = 0.264, sig. = 0.030), PEOU (r = 0.339, sig. = 0.005), PE (r = 0.366, sig. = 0.002), PU (r = 0.398, sig. = 0.001), and EX (r = 0.428, sig. = 0.000).

5. Discussion and Conclusion

My present research results showed the strategies that the divide by groups for mobile gaming adoption how the mobile generation influencing users of relatively advanced mobile phone devices in the marketing field both for female and male in preference of mobile device type. Adoption for the mobile gaming players is relative to his knowledge and his experience to capture low "mobile budget" consumers willing to spend on mobile entertainment. My proposition for this study case is to give a strategy for the developers to look for the gender, the differences in the youth market, develop games and game distribution methods differentiating between the preferences of two different gender segments in mobile gaming sectors. Also my research about the mobile gaming players showed that the adoption behavior was most influenced by the Perceived expressiveness. Perceived expressiveness influenced the perceived enjoyment and the perceived easy to use, what was a significant motivator through perceived enjoyment. For the future research, more focus on the consumers across different groups or places, culture, ages, income levels and industries to enhance contribution of the study to user acceptance and mobile business research model could be revised.

Acknowledgements

References

[1] Ely, J. (1995) Local Conventions. University of California at Berkeley Working Paper.

[2] Armitt, C. (2005) Mobile games revenues set to grow fivefold. New Media Age, 11 (May 26, 2005),

[3] Paavilainen, J. (2003) Mobile games: Creating business with Nokia N-gage. Indianapolis. New Riders.

[4] Wisniewski, D. and Morton, D. (2005) 2005 Mobile Games White Paper.
http://igda.org/online/IGDA_Mobile_White_PAper_2005.pdf

[5] Petrova, K. and Qu, H. (2006) Mobile gaming: A reference model and critical success factors. In M. Khosrow

[6] Oechssler, J. (1997) Decentralization and the Coordination Problem. *Journal of Economic Behavior and Organization*, **32**, 119-139.

[7] Ellison, G. (1993) Learning, Local Interaction, and Coordination. *Econometrica*, **61**, 1047-1071.
http://dx.doi.org/10.2307/2951493

[8] Berninghaus, S.K. and Schwalbe, U. (1996) Conventions, Local Interaction and Automata Networks. *Journal of Evolutionary Economics*, **6**, 313-324. http://dx.doi.org/10.1007/BF01193635

[9] Bhaskar, V. and Vega-Redondo, F. (1996) Migration and the Evolution of Conventions. Discussion Paper, University of Alicante, Alicante.

[10] Moore, K. and Rutter, J. (2004) Understanding Consumers' Understanding of Mobile Entertainment. In: Moore, K. and Rutter, J., Eds., *Mobile Entertainment*: *User-Centred Perspectives*, ESRC CRIC (University of Manchester), Manchester, 49-65.

[11] Baldi & Thaung 2002; Pedersen, Methlie & Thorbljornsen 2002; Barnes & Huff 2003; Pagani & Schipani 2003; Moore & Rutter 2004; Carlsson *et al.* 2005; Pedersen 2005. Asynchronous Adoption Patterns of Mobile Services. *Proceedings of the* 38*th Annual Hawaii International Conference on Systems Sciences*, 189, *Electronic Markets*, **12**, 6-13.

[12] Barnes, S.J. and Huff, S.L. (2003) Rising Sun: iMode and the Wireless Internet. *Communications of the ACM*, **46**, 79-84. http://dx.doi.org/10.1145/948383.948384

[13] Ajzen, I. (1985) From Intentions to Actions: A Theory of Planned Behavior.
Springer, A.I. (1991) The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, **50**, 179-211. http://dx.doi.org/10.1016/0749-5978(91)90020-T

[14] Ling, R. (2001) It is "In." "It Doesn't Matter if You Need It or Not, Just That You Have It": Fashion and the Domestication of the Mobile Telephone among Teens in Norway. Oslo: Working Paper, Telenor R&D, Norway and Taylor, A.S. and Harper, R.H.R. (2001) The Gift of the Gab: A Design Oriented Sociology of Young People's Uses of "Mobilze! Working Paper, Digital World Research Centre, University of Surrey, Guildford.

[15] Dabholkar, P.A. and Bagozzi, R.P. (2002) An Attitudinal Model of Technology-Based Selfservice: Moderating Effects of Consumer Traits and Situational Factors. *Journal of the Academy of Marketing Science*, **30**, 184-202.
http://dx.doi.org/10.1177/0092070302303001

[16] Baldi, S. and Thaung, H.P.-P. (2003) The Entertaining Way to M-Commerce: Japan's Approach to the Mobile Internet—A Model for Europe? *Electronic Markets*, **12**, 6-13. http://dx.doi.org/10.1080/101967802753433218

[17] Nysveen, H., Pedersen, P.E. and Thorbjornsen, H. (2005) Intention to Use Mobile Services: Antecedents and Cross-Service Comparisons. *Journal of the Academy of Marketing Science*, **33**, 330-346.
http://dx.doi.org/10.1177/0092070305276149

[18] Venkatesh, V. (2000) A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*, **46**, 186-204. http://dx.doi.org/10.1287/mnsc.46.2.186.11926

[19] Moore, K. and Rutter, J. (2004) Challenging Game and Game Which Is Technically Difficult to Play May Be Perceived as Not Enjoyable: User-Centred Perspectives. ESRC CRIC (University of Manchester), Manchester, 49-65.

[20] Both Ease of Use and Usefulness. *Omega*, **27**, 25-37. (e.g. Thompson, Lim and Lai, 1999).

[21] Anckar, B. and D'Incau, D. (2002) Value-Added Services in Mobile Commerce: An Analytical Framework and Empirical Findings from a National Consumer Survey. *Proceedings of the 35th Hawaii International Conference on System Sciences*, Hawaii, 7-10 January 2002, 1087-1096. http://dx.doi.org/10.1109/HICSS.2002.994012

[22] Hung, S., Ku, C. and Chang, C. (2003) Critical Factors of WAP Services Adoption: An Empirical Study. *Electronic Commerce Research and Applications*, **2**, 42-60. http://dx.doi.org/10.1016/S1567-4223(03)00008-5

[23] Kleijnen, M., de Ruyter, K. and Wetzels, M. (2003) Consumer Adoption of Wireless Services: Discovering the Rules, while Playing the Game. *Journal of Interactive Marketing*, **18**, 51-61. http://dx.doi.org/10.1002/dir.20002

[24] Hsu, C. and Lu, H. (2004) Why Do People Play On-Line Games? An extended TAM with Social Influences and Flow Experience. *Information and Management*, **41**, 853-868. http://dx.doi.org/10.1016/j.im.2003.08.014

[25] Webster, J. and Trevino, L.K. (1995) Rational and Social Theories as Complementary Explanations of Communication Media Choices: Two Policy-Capturing Studies. *Academy of Management Journal*, **38**, 1544-1572. http://dx.doi.org/10.2307/256843

[26] Kleijnen, M.D., de Ruyter, K. and Wetzels, M. (2003) Factors Influencing the Adoption of Mobile Gaming Services. In: Mennecke, B.E. and Strader, T.J., Eds., *Mobile Commerce Technology, Theory, and Applications*, Idea Group Publishing, Hershey, 202-217. http://dx.doi.org/10.4018/978-1-59140-044-8.ch011

[27] Nysveen, H., Pedersen, P.E. and Thorbjornsen, H. (2005) Intentions to Use Mobile Services: Antecedents and Cross-Service Comparisons. *Journal of the Academy of Marketing Science*, **33**, 330-346.

[28] Wu, J.H. and Wang, S.C. (2005) What Drives Mobile Commerce? An Empirical Evaluation of the Revised Technology Acceptance Model. *Information Management*, **42**, 719-729. http://dx.doi.org/10.1016/j.im.2004.07.001

[29] Aarnio, A., Enkenberg, A., Heikkila, J. and Hirvola, S. (2002) Adoption and Use of Mobile Services. Empirical Evidence Forms a Finnish Study. *Proceedings of the 35th Hawaii International Conference on System Sciences*, Hawaii, 7-10 January 2002, 1454-1463. http://dx.doi.org/10.1109/HICSS.2002.994013

[30] Shchiglik, C., Barnes, S., Scornavacca, E. and Tate, M. (2004) Mobile Entertainment Services: A Study of Consumer Perceptions towards Games Delivered via the Wireless Application Protocol. *International Journal of Services and Standards*, **1**, 155-171. http://dx.doi.org/10.1504/IJSS.2004.005694

[31] Hair, J.F.J., Anderson, R.E., Tatham, L. and Black, W.C. (1998) Multivariate Data Analysis. 5th Edition, Prentice Hall Inc., Upper Saddle River.